

THE
Municipality of George Town,

PENANG,

STRAITS SETTLEMENTS.



*Complete
for 1920*

Health Officer's

ANNUAL REPORT


FOR THE YEAR 1927.

Price 50 Cents Per Copy.

OBTAINABLE FROM THE MUNICIPAL SECRETARY.

1928.

THE CRITERION PRESS, LTD., PENANG.



Digitized by the Internet Archive
in 2019 with funding from
Wellcome Library

<https://archive.org/details/b31487270>



STATISTICAL SUMMARY.

Situation	... Lat. 5° 24' N., Long. 100° 1' E.
Average Elevation above L.W.M.O.S.T.	... Town area 12 feet 6 inches. Country area 25 feet 0 inch.
O. S. Tides rise and fall	... 9 feet 0 inch.
Rainfall 1927 (average of three readings within Municipal limits).	... 85.52 inches.
Mean Temperature 1927	... 81.78° F.
Maximum Temperature 1927	... 98.00° F.
Minimum do.	... 69.00° F.
Total area of Penang Island	... 108 sq. miles.
Area within Municipal Limits	... 9.4 sq. miles or 5,845 acres.
Estimated population (mid. year)	... 138,635.
Density of Population	... 23.89 per acre.
Crude Death Rate	... 35.06 per mille.
Infant Mortality	... 158.
Birth Rate	... 37.15 per mille.
Sterling equivalent of \$1.00	... 2s. 4d. (approximately).

STAFF OF THE HEALTH DEPARTMENT ON 31st DECEMBER, 1927.

G. S. GLASS ... B.A., M.B., D.P.H., D.T.M. and H.,
 Health Officer,
 Registrar of Births and Deaths,
 Deputy Superintendent of Vaccination,
 Registrar of Midwives,
 Medical Superintendent of Infectious Diseases Hospital,
 Medical Superintendent of Chinese Small-pox Hospital.

KHOO TIANG PHEAN M.B., B.S., (Hong Kong).
 Deputy Registrar of Deaths.

W. A. WARD	...	Chief Sanitary Inspector, joined the service	1st January,	1893.
A. A. JEREMIAH	...	do.	do.	1st January, 1904.
J. S. REUTENS	...	do.	do.	1st January, 1905.
H. L. McCULLOCH	...	do.	do.	1st January, 1912.
R. J. RÄNGEL	...	Sanitary Sub-Inspector	do.	1st October, 1913.
B. B. PETERS	...	do.	do.	1st May, 1918.
M. D'SOUZA	...	do.	do.	1st April, 1919.
J. LOH	...	do.	do.	17th May, 1921.
OW LEONG CHYE	...	do.	do.	1st July, 1921.
E. V. LESSLER	...	do.	do.	1st July, 1921.
V. E. FOZELLS	...	do.	do.	1st September, 1921.
LIM THEAN SOO	...	do.	do.	1st September, 1921.
F. A. SCULLY	...	do.	do.	1st May, 1922.
YEAP HIN TAT	...	do.	do.	14th August, 1922.
LIM KHAY SENG	...	do.	do.	1st March, 1923.
LO SIEW TEAN	...	do.	do.	1st July, 1923.
TEOH CHENG HOE	...	do.	do.	1st December, 1923.
M. S. D'ORVILLE	...	do.	do.	18th February, 1924.
LIM FOOK THOONG	..	do.	do.	1st August, 1925.
OH CHENG GUAN	...	Temporary Sanitary Sub-Inspector	do.	18th May, 1926.
LIEW AH FOO	...	do.	do.	20th May, 1926.
Miss J. A. G. RONALD	C.M.B.,	District Nurse, joined the service	9th January,	1923.
Miss C. M. GOLD	...	do.	do.	9th April, 1923.

Eight Qualified Chinese Midwives as part-time District Nurses.

MUNICIPAL HEALTH OFFICE,

Penang, 10th March, 1928.

To

THE MUNICIPAL COMMISSIONERS

GENTLEMEN,

I have the honour to submit the following report on the health of the Municipality during 1927.

Population.

1. The estimated population was 138,635 divided among the various nationalities as follows:—

TABLE I.

Nationality.			Males.	Females.	Total
European	...	...	717	412	1,129
Eurasian	...	...	725	849	1,574
Chinese	...	...	56,810	38,244	95,054
Malay	...	...	9,079	9,236	18,315
Indian	...	...	16,511	4,709	21,220
Others	...	...	793	550	1,343
			84,635	54,000	138,635

Births.

2. There were 5,151 births registered of whom 2,583 were males and 2,568 females, the birth rate being 37.15 per thousand. The figures for 1926 were, births 4,434 and birth rate 32.60.

Reckoned on the estimated female population alone the birth rate was 95.39 per thousand compared to 83.70 per thousand in 1926.

The number of births and the birth rates for the various nationalities were as follows:—

TABLE II.

Nationality.		Number of births.			Birth rate per thousand.	
		Males.	Females.	Total.	Total Population.	Female Population.
European	..	27	34	61	54.03	148.06
Eurasian	...	30	44	74	47.01	87.16
Chinese	...	1,885	1,828	3 714	39.07	97.11
Malay	..	316	322	638	34.83	69.08
Indian	...	308	323	631	29.74	133.99
Others	...	16	17	33	24.57	60.00

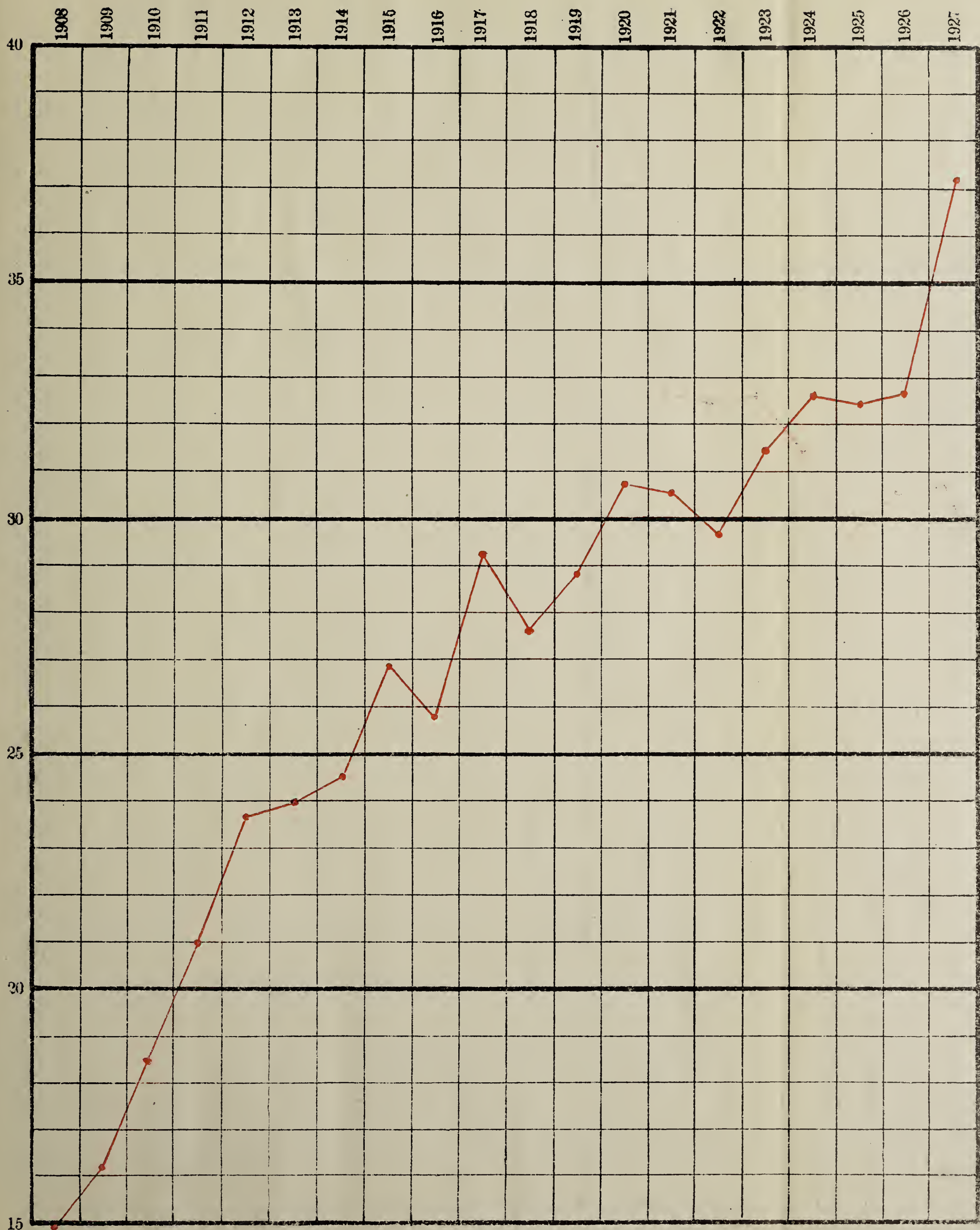
A comparison with the births registered during the previous ten years is shown :—

TABLE III.

Year.	European.	Eurasian.	Chinese.	Malay.	Indian.	Others.	Total.
1917	39	44	2,010	463	472	71	3,099
1918	57	53	2,008	403	381	38	2,940
1919	41	51	2,134	481	467	29	3,203
1920	46	43	2,250	468	464	50	3,321
1921	48	71	2,623	557	437	32	3,768
1922	54	53	2,655	534	404	38	3,738
1923	59	53	2,818	573	499	26	4,028
1924	53	54	2,903	660	544	43	4,257
1925	46	52	3,135	562	497	26	4,318
1926	51	55	3,193	585	514	36	4,434
Average for ten years.	49	53	2,573	529	468	39	3,711
1927	61	74	3,714	638	631	33	5,151

PENANG MUNICIPALITY.

BIRTH RATE.



A comparison of the births and deaths in the different nationalities may be of interest:—

TABLE IV.

Nationality.		Births.	Birth rate per thousand.	Deaths.	Death rate per thousand.
European	...	61	54.03	11	9.74
Eurasian	...	74	47.01	29	18.42
Chinese	...	3,714	39.07	2,664	28.03
Malay	...	638	34.83	550	30.03
Indian	...	631	29.74	758	35.72
Others		33	24.57	33	24.57

Deaths.

3. The gross total of deaths within Municipal limits during the year was 4,860 and the crude death rate 35.06; of this number 815 were not normally resident in Penang and had been less than three months within Municipal limits. Omitting these we have 4,045 deaths and a corrected death rate of 29.18 per thousand.

The increase in death rate is not attributed to any special disease or group of diseases.

There was an even greater increase in the birth rate.

The following table shows the distribution of the deaths in age groups and nationalities.

TABLE V.

Nationalities.	Sex.	A G E S .											Total.	Grand Total.
		Under 1 year.	1 to 5 years.	5 to 15 years.	15 to 25 years.	25 to 35 years.	35 to 45 years.	45 to 55 years.	55 to 65 years.	65 to 75 years.	over 75 years.	Unknown.		
European	M.	1	...	...	1	1	...	2	1	1	...	...	7	11
	F.	1	...	1	...	..	...	2	...	...	...	...	4	
Eurasian	M.	2	2	...	2	2	2	1	1	1	1	...	14	29
	F.	2	1	4	...	...	2	1	3	2	...	...	15	
Chinese	M.	310	119	54	125	200	289	284	201	101	32	9	1,724	2,664
	F.	278	129	63	55	88	97	66	73	54	36	1	940	
Malay	M.	61	23	16	9	33	35	23	33	26	8	1	268	550
	F.	48	22	12	31	42	30	18	34	25	20	...	282	
Indian	M.	59	32	18	47	120	106	60	40	25	16	8	531	758
	F.	52	32	12	28	30	23	16	8	18	7	1	227	
Other Nationalities	M.	1	3	...	1	...	...	4	3	3	2	...	17	33
	F.	1	...	1	1	...	1	3	1	4	4	...	16	
Total	M.	434	179	88	185	356	432	374	279	157	59	18	2,561	4,045
	F.	382	184	93	115	160	153	106	119	103	67	2	1,484	
		816	363	181	300	516	585	480	398	260	126	20	4,045	

Compared with 1926 the Chinese deaths have increased by 228, the Malay deaths by 53, and the Indian deaths by 190.

The total deaths of each nationality in the last ten years is shown here.

TABLE VI.

Year.	European.	Eurasian.	Chinese.	Malay.	Indian.	Others.
1918	9	26	2,930	479	927	56
1919	13	34	2,539	528	872	38
1920	11	44	2,398	382	676	42
1921	10	26	2,213	394	629	41
1922	12	34	2,130	464	544	46
1923	9	31	2,066	467	573	35
1924	6	30	2,048	519	542	17
1925	5	28	2,165	468	538	36
1926	9	34	2,436	497	568	26
1927	11	29	2,664	550	758	33

Appended is Table VII showing the infant mortality in the various nationalities and a comparison with 1926.

TABLE VII.

Nationality.		Births.	Deaths under one year.	Infant deaths per thousand births.	
		1927		1927	1926
European	...	61	2	33	20
Eurasian	...	74	4	54	36
Chinese	...	3,714	588	158	162
Malay	...	638	109	171	176
Indian	...	631	111	176	154
Others	...	33	2	61	56
Total	...	5,151	816	158	159

The chief causes of infant deaths and the mortality compared with that in previous years from the same causes are given in Table VIII.

PENANG MUNICIPALITY.

INFANT MORTALITY.

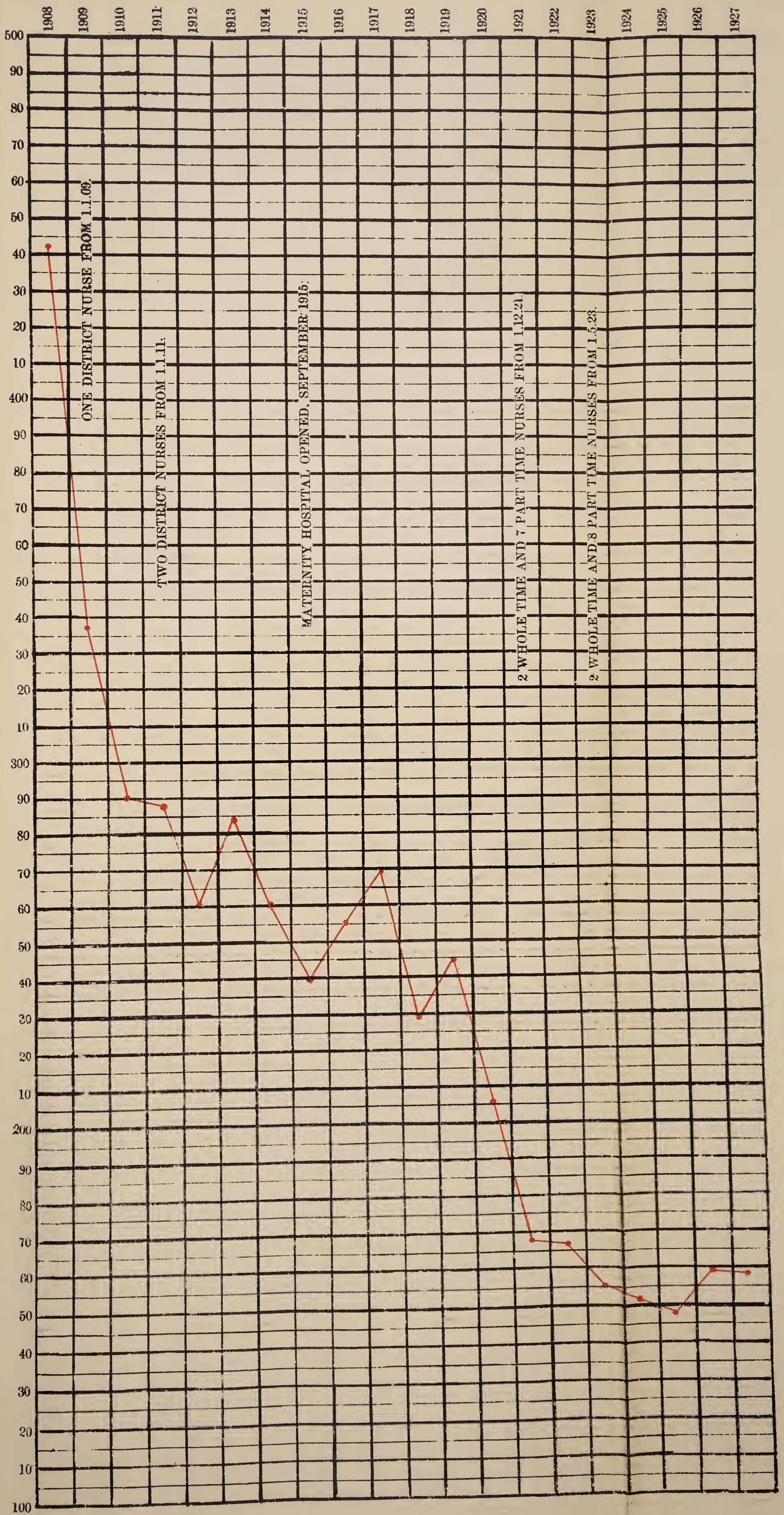


TABLE VIII.

Infant deaths per thousand births.										
	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Tetanus ..	30	39	34	22	2	8	4	0.5	0.23	0.19
Intestinal diseases ...	61	71	54	38	36	37	23	19	21	14
Respiratory diseases ...	54	46	41	31	24	27	25	27	19	26
Prematurity & Debility	46	48	47	32	15	26	27	23	29	22
Convulsions ..	12	9	9	24	59	23	43	47	60	71

These causes accounted for 688 of the 816 infant deaths which occurred.

One infant was certified as having died from tetanus and 368 were returned as having died from convulsions; the corresponding figures for 1926 are 1 and 265.

Table VIII is unreliable, the only figures that may be used with any exactitude for comparison are those given in Table VII.

Table IX is given to show a comparison between births, infant mortality and general death rate for the preceding ten years and for 1927.

TABLE IX.

Year.	Estimated population.	BIRTHS.		DEATHS UNDER 1 YEAR.		DEATHS AT ALL AGES.			
		Total.	Rate per thousand population.	Total.	Rate per thousand births.	Crude Total.	Corrected Total.	Crude Rate.	Corrected Rate.
1917 ...	105,950	3,099	29.25	831	269	4,071	3,831	38.42	36.16
1918 ..	106,723	2,940	27.55	673	229	4,909	4,430	45.99	41.50
1919 ...	107,502	3,203	28.86	782	244	4,466	4,024	41.54	37.43
1920 ...	108,286	3,321	30.67	681	205	4,090	3,554	37.75	32.82
1921* ...	123,300	3,768	30.56	631	167	3,775	3,313	30.61	26.87
1922 ...	125,834	3,738	29.71	622	166	3,768	3,230	29.94	25.67
1923 ..	128,300	4,028	31.39	626	155	3,801	3,183	29.62	24.81
1924 ...	130,810	4,257	32.54	641	151	3,811	3,162	29.13	24.17
1925 ..	133,373	4,318	32.38	634	147	3,858	3,240	28.93	24.29
1926 ...	136,000	4,434	32.60	705	159	4,396	3,570	32.32	26.25
Average for the preceding ten years.	120,607	3,711	20.55	683	189	4,094	3,554	34.42	30.00
1927 ...	138,635	5,151	37.15	816	158	4,860	4,045	35.05	29.18

*Census Year

Cause of Death.

4. Table X shows the age, sex and cause of death certified; 1,559 of the certificates were from Hospitals or Private Practitioners, 32 from the Coroner and 2,454 or 60.66% of the total from the Deputy Registrar of Deaths.

In other words less than half of the cases were under medical attention before death. As the number of post-mortem examinations made was so small as to be negligible, the diagnoses here tabulated must be accepted with reserve.

TABLE X.

Deaths from	Sex.	A G E S .										Unknown.	Total.	Grand
		Under 1 year.	1 to 5 years.	5 to 15 years.	15 to 25 years.	25 to 35 years.	35 to 45 years.	45 to 55 years.	55 to 65 years.	65 to 75 years.	over 75 years.			
Enteric fever ...	{ M.	...	...	1	3	1	2	...	...	...	...	...	7	1
	{ F.	...	...	...	1	2	...	1	1	...	...	...	5	
Diarrhoea ...	{ M.	32	26	6	1	2	5	8	1	4	...	...	85	1
	{ F.	27	17	6	2	2	7	...	2	...	1	...	64	
Dysentery ...	{ M.	1	1	1	6	15	14	14	10	6	3	...	71	8
	{ F.	2	2	...	...	4	3	1	2	1	1	...	16	
Remittent fever ...	{ M.	...	...	1	1	...	1	1	...	...	...	...	4	
	{ F.	...	...	...	...	...	...	...	...	...	...	...	...
Whooping Cough	{ M.	1	...	...	...	...	...	...	...	...	...	...	1	
	{ F.	...	...	...	...	...	...	...	...	...	...	...	...
Unspecified fever...	{ M.	49	51	34	51	72	98	67	50	10	6	...	488	7
	{ F.	38	47	31	36	46	38	19	17	7	...	...	279	
Syphilis ...	{ M.	3	1	...	1	6	4	5	4	...	..	1	25	3
	{ F.	4	...	...	...	...	1	1	...	...	...	...	6	
Puerperal fever ...	{ M.	...	...	...	...	...	...	...	...	...	...	...	...	1
	{ F.	...	1	...	3	5	1	...	...	...	...	...	10	
Other Septic diseases ...	{ M.	11	...	1	4	15	5	15	5	3	...	...	59	8
	{ F.	3	1	3	6	3	5	2	3	2	...	...	28	
Phthisis ...	{ M.	...	3	1	30	82	100	83	34	6	...	1	340	4
	{ F.	...	..	2	10	20	28	14	5	2	1	...	82	
Other Tubercular diseases ...	{ M.	1	...	3	4	4	6	3	..	1	..	...	22	3
	{ F.	...	2	2	2	2	2	...	...	...	...	...	10	
Leprosy ...	{ M.	...	...	...	...	...	...	2	...	...	...	...	2	
	{ F.	...	...	...	1	2	2	1	1	...	...	...	7	
Tetanus ...	{ M.	...	...	1	1	2	3	...	...	...	..	...	7	
	{ F.	1	...	...	...	...	..	1	..	...	...	...	2	
Measles ..	{ M.	1	...	...	...	...	...	...	...	...	...	...	1	
	{ F.	...	2	...	...	...	...	..	...	...	...	...	2	
Totals to carry forward ...	{ M.	99	82	49	102	199	238	198	104	30	9	2	1,112	1,6
	{ F.	75	71	45	61	86	87	40	31	12	3	..	511	

TABLE X. (Continued).

Deaths from	Sex.	A G E S .										Unknow.	Total.	Grand Total
		Under 1 year.	1 to 5 years.	5 to 15 years.	15 to 25 years.	25 to 35 years.	35 to 45 years.	45 to 55 years.	55 to 65 years.	65 to 75 years.	over 75 years.			
Brought forward.	{ M.	99	82	49	102	199	238	198	104	30	9	2	1,112	1,623
	{ F.	75	71	45	61	86	87	40	31	12	3	...	511	
Diphtheria ...	{ M.	...	2	...	...	...	...	...	...	...	...	...	2	5
	{ F.	...	2	..	...	...	...	1	...	...	...	...	3	
Influenza ...	{ M.	1	2	1	6	3	2	1	...	1	2	...	19	33
	{ F.	1	2	1	1	1	1	1	2	3	1	...	14	
Erysipelas ...	{ M.	..	...	...	...	...	...	...	...	1	...	...	1	1
	{ F.	...	...	...	...	..	...	...	...	...	..	...	...
Cerebro-Spinal Meningitis ...	{ M.	1	...	...	...	...	...	...	...	...	...	...	1	1
	{ F.	..	...	...	...	...	...	...	...	...	...	...	...
Malaria ...	{ M.	...	2	1	20	42	29	11	10	3	2	1	121	147
	{ F.	..	1	5	6	2	4	3	4	1	...	...	26	
Malarial Cachexia	{ M.	...	...	...	1	..	1	...	...	...	..	...	2	2
	{ F.	...	...	...	...	...	...	...	...	...	...	...	...
Scorbut ...	{ M.	...	2	3	1	2	1	1	...	...	...	...	10	23
	{ F.	...	6	5	...	...	...	2	...	...	...	...	13	
Rheumatism ...	{ M.	...	...	...	...	...	1	...	1	...	...	...	2	5
	{ F.	..	...	...	...	...	1	1	1	...	...	...	3	
Cancer ...	{ M.	...	..	...	..	1	2	5	6	3	...	...	17	27
	{ F.	...	..	1	...	1	1	5	1	1	...	...	10	
Leucæmia ...	{ M.	...	...	...	1	1	...	1	...	...	...	...	3	9
	{ F.	...	...	...	...	4	1	...	...	1	...	...	6	
Beri-beri ...	{ M.	...	...	..	3	3	4	1	...	...	...	...	11	16
	{ F.	...	...	...	2	2	1	...	...	...	...	...	5	
Immature birth ...	{ M.	39	...	...	...	...	...	...	...	...	...	...	39	63
	{ F.	24	...	...	...	...	...	...	...	...	...	...	24	
Old age ...	{ M.	...	...	...	...	...	...	1	39	74	34	...	148	293
	{ F.	...	...	...	...	...	...	...	34	60	51	...	145	
Convulsions ...	{ M.	192	24	2	...	...	...	...	...	...	...	...	218	438
	{ F.	176	36	8	...	...	...	...	...	..	...	...	220	
Other diseases of nervous system ...	{ M.	3	2	3	3	4	3	3	3	2	...	...	26	41
	{ F.	4	1	2	...	2	..	4	1	...	1	...	15	
Brought forward	{ M.	335	116	59	137	255	281	222	163	114	47	3	1,732	2,727
	{ F.	280	119	67	70	98	96	57	74	78	56	0	995	

8
TABLE X. (Continued).

Deaths from	Sex.	A G E S .										Unknown.	Total.	Grand Total
		Under 1 year.	1 to 5 years.	5 to 15 years.	15 to 25 years.	25 to 35 years.	35 to 45 years.	45 to 55 years.	55 to 65 years.	65 to 75 years.	over 75 years.			
Brought forward.	{ M.	335	116	59	136	255	281	292	163	114	47	3	1,732	2,727
	{ F.	280	119	67	70	98	96	57	74	78	56	...	995	
Organs of special sense ...	{ M.	...	...	...	..	...	...	...	...	...	...	...	...	1
	{ F.	..	1	...	...	...	...	...	...	...	...	...	1	
Circulatory System	{ M.	2	1	4	11	21	31	26	24	9	3	1	133	220
	{ F.	3	2	1	11	11	14	12	15	11	7	...	87	
Bronchitis ...	{ M.	11	5	2	...	1	6	23	24	10	2	...	84	142
	{ F.	9	13	2	1	..	4	7	14	7	1	...	58	
Pneumonia ...	{ M.	42	41	18	22	38	52	42	20	5	2	3	285	413
	{ F.	35	22	13	12	20	15	7	2	2	...	...	128	
Other diseases of Respiratory system	{ M.	12	10	...	3	10	11	13	9	4	1	8	76	140
	{ F.	24	19	3	3	2	4	4	3	...	2	...	64	
Enteritis ...	{ M.	4	1	...	1	4	3	5	2	1	..	...	21	36
	{ F.	2	3	3	2	2	...	3	..	...	...	...	15	
Diseases of Liver ...	{ M.	1	...	2	1	2	6	7	5	3	1	...	28	33
	{ F.	...	...	...	...	2	...	1	1	...	1	...	5	
Other diseases of Digestive system...	{ M.	4	...	...	3	7	7	5	6	...	...	...	32	39
	{ F.	...	1	1	...	...	2	1	...	2	...	...	7	
Glandlike organs of uncertain use ..	{ M.	...	...	...	...	...	...	...	...	...	...	...	..	2
	{ F.	...	..	...	...	...	...	1	1	...	...	...	2	
Urinary system ...	{ M.	...	2	1	3	12	23	27	22	9	2	...	101	144
	{ F.	1	1	1	6	8	5	12	7	2	...	...	43	
Generative Organs	{ M.	...	...	..	...	...	...	...	...	1	..	..	1	8
	{ F.	...	...	...	2	3	2	...	...	...	...	...	7	
Child birth and Abortion ...	F.	...	...	1	8	13	7	...	...	...	...	...	29	29
Bones and Joints...	{ M.	...	...	...	...	...	1	1	...	...	...	...	2	2
	{ F.	...	..	...	...	...	...	...	...	...	...	...	...
Accident and Negligence ...	{ M.	...	1	2	4	4	7	1	...	...	...	2	21	26
	{ F.	...	2	1	...	...	2	...	...	...	...	...	5	
Homicide, Suicide & Execution ...	{ M.	...	...	...	...	2	2	1	2	..	...	4	11	13
	{ F.	...	...	...	...	1	..	...	...	...	...	1	2	
Debility ...	{ M.	23	2	...	...	...	2	1	...	...	1	...	29	61
	{ F.	28	1	...	...	...	1	...	2	...	...	...	32	
Unknown ...	{ M.	...	...	...	...	...	...	...	1	...	...	2	3	5
	{ F.	...	...	...	...	...	1	...	...	...	...	1	2	
Diabetes ...	{ M.	...	...	...	...	...	...	...	1	1	...	...	2	4
	{ F.	...	...	...	...	...	...	1	...	1	...	...	2	
TOTALS ...	{ M.	434	179	88	185	356	432	374	279	157	59	18	2,561	4,045
	{ F.	382	184	93	115	160	153	106	119	103	67	2	1,484	

A comparison between the number of deaths attributed to some of the principal causes in 1927 and in the preceding ten years is shown here.

These figures must be taken with reservation as is explained later, more especially as regards "Unspecified Fever" in Section 7, and as regards Phthisis in Section 19.

TABLE XI.

		1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Average for pre- ceding ten years.	1927
Phthisis	...	590	722	693	677	580	455	454	511	499	460	564	422
Pneumonia	...	220	559	243	235	220	266	222	188	276	349	278	413
Bronchitis	...	148	198	152	146	126	88	112	58	113	91	123	142
Malaria	...	455	478	606	505	420	134	101	52	97	134	298	147
Unspecified fever	...	239	323	68	20	116	504	524	589	659	809	385	767
Enteritis	...	266	257	318	265	186	73	97	9	35	42	155	36
Dysentery	...	147	130	188	138	115	108	75	81	58	89	113	87
Diarrhoea	...	29	30	49	23	115	147	166	157	125	144	98	149
Beri-beri	...	323	262	238	143	102	71	30	15	6	9	120	16
Debility	...	147	95	153	143	103	44	77	82	61	62	97	61
Tetanus	...	133	199	133	120	91	14	39	20	4	4	76	9
Old Age	...	198	141	174	142	173	203	274	302	287	211	210	293
Small-pox	...	7	16	142	18	2	...	...	...	...	...	...	...

The distribution of the chief causes of death among the various nationalities is shown in Table XII.

TABLE XII.

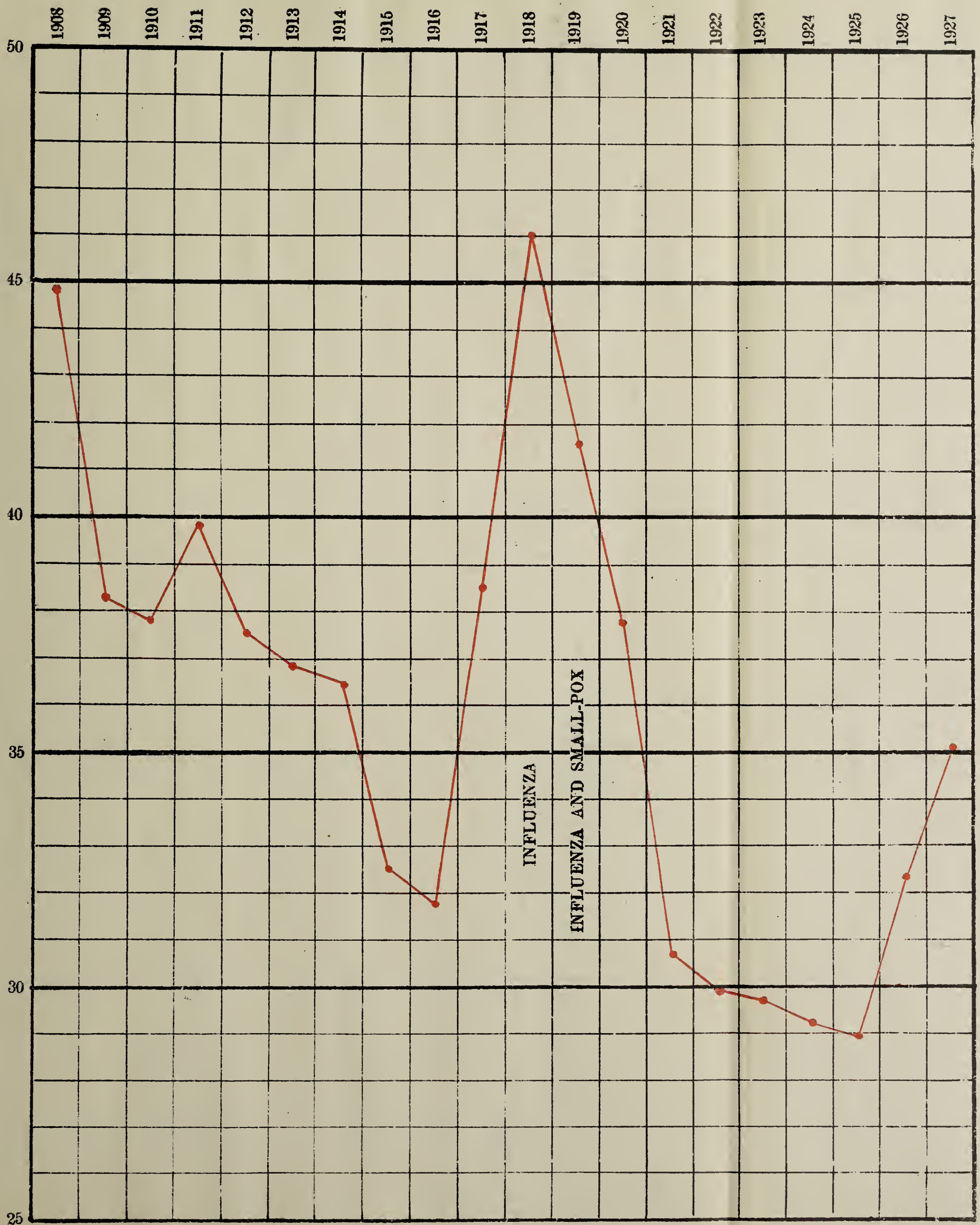
Certified cause of death.	European.	Eurasian.	Chinese.	Malay.	Indian.	Others.	Total.
Diarrhoea	...	1	131	...	17	...	149
Dysentery	...	1	48	4	34	...	87
Unspecified fever	...	1	415	182	164	5	767
Syphilis	24	2	4	...	31
Other Septic diseases	59	6	21	1	87
Phthisis	...	4	318	36	60	3	422
Malaria	...	1	94	5	45	1	147
Convulsions	...	1	309	78	49	1	438
Diseases of the Circulatory System	...	3	164	25	23	4	220
Bronchitis	...	1	111	15	15	...	142
Pneumonia	...	1	271	30	110	1	413
Other Respiratory diseases	...	4	96	8	32	...	140
Enteritis	...	1	29	...	6	...	36
Diseases of the Urinary System	...	3	99	13	28	...	144
Debility	...	1	30	9	21	...	61

TABLE XIII.

Cause of death.	NUMBER CERTIFIED BY			
	Hospitals.	Private Practitioners.	Deputy Registrar of Deaths.	Coroner
Enteric fever	...	3	9	...
Diarrhoea	...	3	13	...
Dysentery	...	56	23	...
Unspecified fever	...	5	45	...
Phthisis	...	149	70	...
Tetanus	...	6	3	...
Influenza	33	...
Malaria	...	94	47	...
Beri-beri	...	9	6	...
Old Age	...	21	13	...
Convulsions	...	2	31	...
Diseases of the Circulatory System	...	39	104	...
Bronchitis	...	6	28	...
Pneumonia	...	74	44	...
Enteritis	...	10	18	...

PENANG MUNICIPALITY.

CRUDE DEATH RATE.



Seasonal Mortality.

5. The deaths and death rate for each month are here recorded.

TABLE XIV.

Month.	Deaths.	Death rate per thousand.	Month.	Deaths.	Death rate per thousand.
January	322	27.33	July	369	31.34
February	317	29.81	August	346	29.39
March	326	27.69	September	313	27.47
April	342	30.01	October	383	32.53
May	341	28.96	November	327	28.70
June	328	28.79	December	331	27.65

Infectious Diseases.

6. Table XV shows the incidence among the various nationalities of the principal infectious diseases which occurred during the year.

TABLE XV.

Nationality.	Whooping cough.	Cerebro-spinal meningitis.	Chicken-pox.	Enteric fever.	Tuberculosis.	Influenza.	Puerperal fever.	Erysipelas.	Diphtheria	Measles	Mumps	TOTAL.
European	M.	—	—	—	1	—	—	—	—	—	—	1
	F.	—	—	—	—	—	—	—	—	—	—	—
Eurasian	M.	—	1	1	2	—	—	—	1	—	—	5
	F.	—	—	1	2	—	—	—	—	1	—	4
Chinese	M.	1	1	11	278	17	—	—	4	2	—	314
	F.	—	5	5	65	13	7	—	3	2	—	100
Malay	M.	—	1	2	23	—	—	—	—	—	—	26
	F.	—	—	2	15	—	1	—	—	—	—	18
Indian	M.	1	49	—	56	2	—	1	—	6	9	124
	F.	—	5	1	9	1	2	—	—	—	—	18
Others	M.	—	—	—	2	—	—	—	—	—	—	2
	F.	—	—	—	1	—	—	—	—	—	—	1
Total	M.	1	52	14	362	19	—	1	5	8	9	472
	F.	—	10	9	92	14	10	—	3	3	—	141
Grand Total	...	1	62	23	454	33	10	1	8	11	9	613

Registration of Births and Deaths.

7. Until 1st September 1920 this work was carried out by Government, although my predecessors had for many years suggested reform.

Dr. Park in the 1909 Report wrote "We have reason to believe that a large number of births are still unregistered."

Dr. Rose in the 1920 Report, describing the old system, said "All births had to be reported at the office of the Registrar.

This to many people meant a journey of 4 to 5 miles with corresponding expense in time and money and I doubt if all our births were reported."

And referring to registration of deaths, he said "the copies of the 'daily death returns' were usually received by the Municipal Health Officer 4 to 5 days after the deathsThe Municipal Health Officer is primarily responsible for the health of the community and he should be the first to be informed of all births and deaths."

He then goes on to describe our present system, which seems much the same as the former system except that Government give increased facilities for reporting births, all police stations now being added as birth reporting centres.

This concession, readily granted by Government, has proved of great value. Our Inspectors visit the police stations daily and verify the address if correct, and even where the wrong address has been given they can usually trace the baby with the help of the local knowledge of the police.

This alteration in the system of registration has thus three important results:— (a) it is easier for the people to report births, (b) having the correct address facilitates the work of the District Nurses, and (c) it facilitates the work of the vaccinators.

There was no change in the system of registering deaths except that the reports were handed in to the Municipal Office first and transmitted by us to the Government Office.

During the year 1921, I went thoroughly into the question of our death returns. More than half of the total deaths in Penang are certified by the Deputy Registrar of Deaths, (D.R.D.), who of course is called in only after death has occurred.

In the last quarter of 1921 the old D.R.D. was boarded out as physically unfit, and a new one was appointed.

The new one, like his predecessor, was a Government Assistant Surgeon, kindly lent to us by Government.

Our present D.R.D., engaged direct by the Municipality, was appointed in September 1922.

In my report for the year 1921, under the heading "Infant Mortality," I commented on the meagreness of the information on which the D.R.D. was compelled to make a diagnosis as to the probable cause of death, and added the following remarks:—

"It is not surprising that different men should form different conclusions from such evidence as to the probable cause of death.

For nine and a half months one officer did the work of the Deputy Registrar of Deaths, and during that time he returned six infants as having died of convulsions. During the remaining two and a half months no less than 51 were similarly diagnosed by the D.R.D. while in the same period no corresponding increase appeared in the returns coming from Hospital and private practitioners."

While fully realizing the difficulties confronting the D.R.D., I took this as an indication of the unreliability of his returns.

I did not blame the D.R.D., on the available evidence accurate diagnosis was not to be expected.

In the same report of 1921, in speaking of the increase of deaths shown under the head "Unspecified Fever," I said—"Our mosquito surveys led us to the belief that malaria was not likely to be acquired within Municipal limits, and therefore that the death rate from malaria was mostly if not entirely beyond our control.

The uncomfortable feeling remained that many of the deaths attributed, on the meagre evidence available, to malaria by the Deputy Registrar of Deaths, might be due to some other cause, for example to Enteric fever.

For this reason, in the latter half of the year I told the Deputy Registrar of Deaths that it would be better to notify death as due to "Unspecified fever," unless there was some proof that it was due to malaria.

The obvious intention was to avoid accepting too readily a large number of deaths as due to a cause beyond our control, deaths due actually to a cause over which we should have some control.

In that year the D.R.D. was able to submit 50 blood films from cases in which he suspected the cause of death to be malaria, the parasites were found in only 19 of the 50. The Chief Medical Officer, Penang, kindly arranged then, as he still does, for the laboratory examination to be made at the Government Laboratory, and the Government Pathologist has always readily helped us in this as in other matters.

From inquiries made from general practitioners, and from the Chief Medical Officer, (as affecting Hospital returns), I am led to the belief that the great majority of deaths shown under the head "Unspecified Fever" are really deaths due to Phthisis and Malaria,—in what proportion, I am as yet uncertain.

We do know that within our limits conditions favour the spread of phthisis; we believe that little malaria is contracted in the town.

Malaria propagation we can, and I believe we do, deal with effectively.

The propagation of phthisis is a much more difficult matter to control, perhaps our most urgent and at present our least controllable problem.

This question is again referred to under the heading "Tuberculosis."

It must be noted that all our rates shown as birth rates and death rates are based on an estimation of population which is probably less than the actual average population during the year, hence the birth and death rates may be shown higher than they would be if an accurate census for the year were available.

Vaccination.

8. The system of infant vaccination remained the same as in 1926; most of the work was done by two senior Sub-Inspectors and the results were satisfactory.

5,151 births were reported during the year.

Our staff did 2,635 primary vaccinations, other public vaccinators and private practitioners 1,096, total primary vaccinations 3,731.

817 infants died under age of one year of whom 725 were unvaccinated.

Small-pox.

9. No case was reported.

Enteric Fever.

10. 23 cases were reported, 2 Eurasians, 16 Chinese 4 Malays and 1 Indian.

3 cases of a severe type treated in Hospital proved fatal.

20 remained at home, 9 died and 11 recovered.

Cerebro-spinal Meningitis.

11. One case was reported.

This was a male Indian, aged 7 months; it was treated at home and died.

Chicken-pox.

12. 62 cases were reported, 52 of which were admitted to the Quarantine Camp. There were no deaths.

Of the total, 1 was Eurasian, 6 were Chinese, 1 Malay and 54 Indians.

As usual the Indians showed a distinct susceptibility to this disease, the number affected being quite out of proportion to the size of the community.

Plague.

13. No case was reported.

Puerperal Fever.

14. 10 cases were reported, compared to 9 in 1926.

7 cases were Chinese, one Malay and 2 Indians; all died.

Influenza.

15. Under Ordinance No. 157 (Quarantine and Prevention of Disease), this is classified as a dangerous infectious disease.

33 persons were reported as having died of this disease: 30 Chinese and 3 Indians.

Cases were reported every month.

Six cases were reported in May and four each in February, October and December.

All the cases were notified by General Practitioners.

Diphtheria.

16. 8 cases were notified: 7 Chinese and 1 Eurasian: their ages were 85 days, 2 years, 3 years (2 cases) 4 years (2 cases) 7 years and 47 years. One was admitted to General Hospital and died. Seven were treated at home, three of whom recovered.

Whooping Cough.

17. This is not notifiable as an infectious disease.

One case was reported.

Measles.

18. This infectious disease is not notifiable under Ordinance No. 157 (Quarantine and Prevention of Disease). Each year some cases come under our attention, but the disease has never assumed epidemic proportions.

11 cases were brought to our notice.

One was Eurasian, 4 were Chinese and 6 Indians.

6 cases were treated in the Quarantine Camp; all recovered.

5 cases were treated at home; 3 died.

Tuberculosis.

19. 122 living cases were notified and 454 deaths from tuberculosis of all forms. It is difficult to estimate the incidence of phthisis and its mortality, since the majority of persons who die in the town have not been under medical treatment, and the Deputy Registrar of Deaths often cannot get sufficient reliable information to enable him to form a definite diagnosis.

We think it better that he should then use some vague term, such as "Unspecified Fever," rather than attempt an unattainable precision.

This means that we accept some uncertainty about our actual phthisis death rate.

It must be noted that the Deputy Registrar of Deaths, who notified more than sixty per cent. of the total deaths, notified less than half of the deaths registered as due to phthisis.

From the nature of the disease it is to be supposed that the majority of sufferers would not be under medical care in the last stages, and would therefore have to be certified by the Deputy Registrar.

These considerations, and the known prevalence of phthisis in the town, have led me to the conclusion that the majority of the 767 deaths shown under the heading "Unspecified Fever" are in all probability really due to phthisis.

Even the apparent under-estimate of 422 deaths gives far too high a phthisis death rate, about 3.04 per thousand. If, as I fear, we actually had about 900 deaths, or almost 6.5 per thousand, we are faced with a very serious problem.

We cannot expect any great fall in the phthisis rate while there is so much gross overcrowding in the town.

The Health Department has always realized the urgent need for improvement in this respect and in the living conditions of the people, and have unceasingly tried to diminish overcrowding and to secure better light and ventilation in dwelling houses.

For many years past the building of houses has not kept pace with the increase of population, with the result that to-day the overcrowding is worse than ever, and this factor in the maintenance of a high phthisis rate may counterbalance the benefits to be expected from the improving hygienic standard of dwelling houses.

As a check against particularly gross overcrowding, we have in the past carried out night raids on Common Lodging Houses which were known to be among the worst offenders.

On these raids we found the actual number of lodgers present, and afterwards prosecuted the guilty keepers of the houses.

The disproportion between population of the poorer classes and available housing accommodation is now so great that it has seemed unfair to continue this practice. We did only two such raids in 1926 and none in 1927.

We have continued the practice of disinfecting all living quarters where a death from phthisis has been reported, and our staff give personal advice and distribute a leaflet of instructions where cases of phthisis are known or suspected to exist.

The leaflet was prepared under the direction of the Special Committee on Tuberculosis set up by the Municipal Commissioners in 1925, and is printed in English, Chinese, Tamil, Jawi Malay and Romanized Malay.

Anti-Mosquito Works.

20. About 101 Indian coolies were employed from the beginning of the year including 22 boys, or "chokras." The men were divided into three working gangs, with one small gang of 6 oilers.

The amount of oil used was, crude oil 8,125 gallons, solar oil 5,980 gallons, shell mineral turpentine 56 gallons and anti-malarial mixture 4,608 gallons, the total cost of the oil being \$5,349-80.

The men worked mostly at clearing stagnant ditches, filling in pools, and cutting undergrowth,—a large part of the work being done on the so-called “reserve roads.”

The boys, keeping together as one gang, did useful work collecting and burying coconut shells, tins, and other receptacles likely to be mosquito breeding-places.

A special investigation was made of an area bordering on the Municipal limits between Batu Gantong and Waterfall Road, where building development was expected, and a dangerous Anopheline mosquito (*A. maculatus*) was found present in small numbers, but over a rather wide area.

The Municipal Health Department and the Government Health Department had for many years been well aware of the fact that in every direction outside Municipal limits, malaria-carrying mosquitoes were prevalent on our borders, and in the last few years the Government Health Officers have done useful work, both in oiling along the north coastal road, and in work of permanent value from the Waterfall Gardens to our limits.

The full value of that work is not yet shown, as we still find our most dangerous mosquito, *A. maculatus*, in larval form inside our North-Western boundary. Usually it appears to have spread down in a watercourse from beyond our limits, but in one case this explanation did not seem satisfactory and we were forced to conclude that the mosquito was actually breeding inside our area. This was at the upper end of Burma Road.

After this discovery a second special survey was made, the area involved on this occasion being that lying between Waterfall Road and the sea.

Larvae of *A. maculatus* were found inside the Municipal boundary in every watercourse, and in one we found an occasional larva as much as a quarter of a mile within the boundary.

After the first of these two special surveys, the Commissioners authorized the employment of an extra twenty men as an anti-mosquito gang whose primary function was the care of the area from Batu Gantong to Waterfall Road.

At the same time we increased the number of our “chokras” to thirty, and divided them up into two gangs of about fifteen boys each.

After the second survey I detailed an additional gang of oilers to work especially along the dangerous sector of our border.

At the end of the year it is still too soon to say much about the result of our work in this area, but I have reason to think that we are effecting very material improvement.

The Anopheline mosquitoes found within Municipal limits were *A. maculatus*, *A. barbirostris*, *A. subpictus* var., *malayensis*, *A. vagus* and *A. kochi*. These were found in the following places:—

A. maculatus—eighteen times near our northern boundary, at Mount Erskine Cemeteries and from there down as far as the Roman Catholic Cemetery at Pulau Tikus, and to Tanjong Tokong Road above Bagan Jermal.

This is the only proved malaria-carrying species found within our limits.

A. barbirostris, four times on Tanjong Tokong Road, and once each at Bagan Jermal Road, Mount Erskine Road, and at the Penang Club.

A. kochi, Park Road, Western Road, Pulau Tikus Cemetery, Tanjong Tokong Road and Bagan Jermal Road once each.

A. subpictus var., *malayensis*, Perak Road 5 times, Burmah Road and Kelawei Road 3 times each, Dato Kramat Gardens, Kajang Road, McNair Street each twice, Pangkor Road, Scott Road, Western Road, Scotland Road, Tanjong Tokong Road, Bagan Jermal Road, Ayer Rajah Road, Nunn Road, Patani Road, Kuantan Road, Irving Road, Lorong Salamat, Magazine Road and Tye Sin Street once each.

A. vagus, Ayer Rajah Road, Western Road, Noordin Street and Batu Gantong once each.

We continued to supervise the Anti-malaria work and the general sanitation of the new Extension of the Municipal Water Scheme. Thanks to the ready assistance which has always been given by the Municipal Water Engineer, the health of our labour force of over one thousand men has remained excellent.

This area, from the town to Batu Feringghi, eleven miles away, is infected normally by *A. maculatus*, and constant attention is required to prevent outbreaks of malaria.

Markets.

21. We have one private general market, 5 public general markets, one public pig market and one public fish market.

The Municipal Engineer's department is responsible for the sanitation of the public markets, and the importance and difficulty of this work is appreciated.

Theatres.

22. All theatres and cinemas were inspected once a week. The standard of sanitation remains good.

Water Supply.

23. The consumption of water was 46 gallons per day per head of population, including supply for trade and shipping.

To secure a more continuous and plentiful supply, new catchment areas are now being included in the new extension of the Penang Water Scheme.

This department supervises the general sanitation and especially the anti-malaria work on the new scheme.

Our sanitary control commenced on 1st April, 1926. Table XVI, compiled from figures supplied by the Municipal Water Engineer, shows the sickness rate among the labour force employed on the work.

Medical Attendance.

24. Medical advice or treatment was given to Municipal employees 4,067 times.

The total for 1926 was 4,628 and for 1925 was 3,508.

The number seen per month varied from 264 in February to 453 in March.

The number seen in the different departments were:—

Engineer 2,524, Health 544, Electrical 108, Fire Brigade 88, Jimriksha 46, Water 653, Secretariat 91 and Veterinary 13.

TABLE XVI

PENANG WATER SCHEME (NEW EXTENSION).

List of Cases Treated in Hospital.

1926	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.
Total employed	201	239	311	345	263	381	566	745	838	860	896	991
Malaria	13	14	67	61	37	34	9	7	3	2	2	2
Ankylostomiasis	3	8	13	8	2	3	2	7	8	7	4	2
Other Causes	5	4	14	8	23	25	7	10	4	2	13	5
1927												
Total employed	986	1,030	924	969	1,024	1,030	1,172	1,220	1,244	1,280	1,334	1,358
Malaria	1	1	1	2	4	1	1	1	1	—	5	5
Ankylostomiasis	5	1	1	—	1	2	1	2	1	3	3	3
Other Causes	9	6	10	6	8	8	8	6	17	9	18	10

We assumed control of the sanitation of the new extension from April, 1926.

District Nursing.

25. The work was again supervised by Miss J. A. G. Ronald and Miss C. M. Gold.

Eight locally qualified midwives were employed as part time nurses.

The main part of the town is divided into eight districts: to each district a midwife is allocated: each district nurse superintends the work in four districts.

The total number of visits and revisits made by the District Nurses and the eight midwives was about 41,409.

At the end of the year (under the Midwives Ordinance 1923), 41 midwives were registered as Class "A," 93 as Class "B," and 14 as Class "C."

Class "C" are the local "bidans"—unqualified midwives—who were registered after the Central Midwives Board had certified that they possessed a competent practical knowledge of conducting midwifery cases.

154 babies died less than seven days old and 64 between the age of seven and fourteen days.

SALE OF FOOD AND DRUGS ACT.

Milk.

26. Following the custom of previous years only such samples were bought for analysis as showed by lactometer that they were below the normal specific gravity.

Some 4,807 lactometer tests were made by the Laboratory Assistant and over 200 by the Sanitary Inspectors; 15 seemed to be below the standard and samples of these were bought and analysed.

Eight were found to be adulterated, containing respectively 10, 12, 24, 25, 27, 29, 30 and 39 parts per cent. of added water.

Twelve vendors were prosecuted: 9 were convicted and fines ranging from \$20 to \$500 were imposed: the cases against other three vendors will be heard in 1928.

Twenty-six vendors were convicted for having bottles, plantain leaves or foreign matters inside their milk cans and in contact with their milk.

Three men were convicted for selling milk without a licence and six for failing to carry their vendor badges or licences.

211 milk vendors were registered after medical examination. In the year 1926, 1925 and 1924 the numbers registered were 198, 204 and 217.

Infectious Diseases Hospital, Perak Road.

27. 80 patients and 19 healthy contacts were admitted.

Tables XVII and XVIII show the diseases and nationalities of the patients.

TABLE XVII.

Diseases.		Remaining on 31.12.26	Admitted	Total	Discharged	Absconded	Died	Remaining on 31.12.27
Chicken-pox	...	2	57	59	58	—	—	1
Measles	..	2	9	11	11	—	—	—
Mumps	...	—	9	9	8	1	—	—
Urticaria	..	—	1	1	1	—	—	—
Dermatitis	..	—	1	1	1	—	—	—
Yaws	...	—	1	1	1	—	—	—
Observation	..	—	1	1	1	—	—	—
Secondary Syphilis	...	—	1	1	1	—	—	—
Total	...	4	80	84	82	1	—	1

TABLE XVIII.

Nationality		Remaining on 31.12.26	Admitted	Total	Discharged	Absconded	Died	Remaining on 31.12.27
Chinese	..	—	10	10	10	—	—	—
Malay	..	—	1	1	1	—	—	—
Indian	..	4	88	92	90	1	—	1
Total	..	4	99	103	101	1	—	1

The one remaining in Hospital is an Indian, suffering from Chicken-pox.

General Progress in Public Health.

28. A table has been prepared to show the simplest figures dealing with the main facts of the last twenty years.

For purposes of comparison, the Infant Mortality which is still very high is the only figure of unquestionable value, the flaw here being that in the earlier years the registration of deaths was more accurate than the registration of births.

The total number of births varies with the total population and with the proportion of females to males. It is therefore not fair to compare our births or birth rate of to-day with the figures of twenty years ago when there was a much smaller proportion of females.

The fact that we do not know accurately the total or the female population is a further complication.

The crude figure includes so many deaths of persons who never normally resided in the town as to give an erroneous impression, and this figure as well as the crude death rate is of less value because we do not know the population.

Look for example at the wonderful drop in the crude death rate in the census year 1921, due to previous underestimate of the population.

Taken with these mental corrections the table is useful, and shows that great improvement has taken place.

I might invite attention to the increase of one thousand in the number of deaths in 1927 over the 1925 number. In the absence of any epidemic this is a large increase, though partly no doubt due to increase of population with its attendant evils, due to insufficient housing accommodation.

The English Registrar General's method of estimating the population, which we use, assumes a constancy in the rate of increase which does not here exist. That method, however, is the best available.

TABLE XIX.

Year.	Total number of			Crude Death rate.	Infant Mortality.
	Births.	Deaths (crude)	Birth Rate.		
1908	1519	4552	14.97	44.86	442
1909	1656	3923	16.15	38.25	337 (a)
1910	1905	3912	18.39	37.76	290
1911	2133	4045	21.02	39.88	287 (b)
1912	2421	3829	23.69	37.47	261
1913	2464	3794	23.95	36.86	284
1914	2545	3774	24.55	36.40	260
1915	2808	3390	26.89	32.46	239 (c)
1916	2708	3341	25.74	31.76	255
1917	3099	4071	29.25	38.42	269
1918	2940	4909	27.55	45.99	229
1919	3203	4466	28.86	41.54	244
1920	3321	4090	30.67	37.75	205
1921	3768	3775	30.56	30.61	167 (d)
1922	3738	3768	29.71	29.94	166
1923	4028	3801	31.39	29.62	155 (e)
1924	4257	3811	32.54	29.13	151
1925	4318	3858	32.38	28.93	147
1926	4434	4396	32.60	32.32	159
1927	5151	4860	37.15	35.05	158

Note:—(a) 1st January 1909—one District Nurse.

(b) 1st January 1911—two District Nurses.

(c) September 1915—Maternity Hospital opened.

(d) 1st December 1921—two whole time and seven part time District Nurses.

(e) 1st May 1923—two whole time and eight part time District Nurses.

Financial.

29. The total expenditure of the Health Department for 1927 was \$141,320-13.

This includes everything, the Quarantine Camp, the District Nurses Scheme, Vaccination, Anti-Mosquito Work, all pay and allowances and the Commissioners' donations to the Provident Fund of our staff.

The total receipts amounted to \$22,039-74, leaving \$119,280-39 as the cost of the department to the rate-payers.

This represents a rate of 1.946 per cent., or 4.67 pence in the pound sterling.

The estimated population being 138,635, the total cost of the department for the year per head of population is about 86 cents or about two shillings sterling.

Staff.

30. It is with deep regret that I have to report the loss of Dr. J. Stuart Rose who died on the 15th of March of heart failure.

He returned from home leave on the 19th of December 1926, and was in poor health during his short last term of duty.

In Penang he will probably be remembered best as a Health Officer for his work on the reconstruction of Kampong Kolam, and for the indefatigable zeal he displayed in combating the 1918 Influenza epidemic.

As a member of the Penang Volunteers he won the whole-hearted devotion of "B" Company, and played an important part in bringing that Company up to a high standard of efficiency.

His ready help in work and in sport is greatly missed by all the staff of the department.

Miss C. M. Gold who went home on eight months leave, returned on 13th March.

The work of this Department has greatly increased recently, but the staff worked exceptionally well and proved satisfactory in every way.

I have the honour to be,

Gentlemen,

Your obedient servant,

G. S. GLASS, B.A., M.B., D.P.H., D.T.M. & H.,

Municipal Health Officer.

Penang, 17th February, 1928.

To

THE MUNICIPAL HEALTH OFFICER,

Penang.

SIR,

I have the honour to submit the report of the work done by the staff during the year ending 31st December, 1927.

General Sanitation.

The staff made 23,610 inspections and 29,640 reinspections.

They found 1,210 defective and 1,782 filthy houses.

4,481 notices were issued and 4,479 (including 14 unserved and brought forward from 1926) were served: 4,526 (including 405 outstanding on 31.12.26) have been complied with.

(Vide detailed list below).

NOTICES.	Outstanding on 31-12-26.	Unserved on 31-12-26.	New Notices issued 1927.	New Notices served 1927.	Unserved on 31-12-27.	Complied with	Work started.	Cancelled.	Brought forward to 1928.
Nuisance ..	238	4	267	261	10	369	18	9	121
Lime washing ..	11	...	210	210	...	213	3	1	7
Latrines ...	36	...	181	181	...	124	10	3	90
Drains ...	36	...	89	88	1	107	...	2	15
Filthy Premises ...	1	...	393	390	3	389	...	...	2
Common Lodging Houses ...	5	...	880	880	...	880	...	3	2
Trades ...	2	...	587	587	...	586	...	3	...
Bakeries ..	...	...	886	886	...	886	...	...	...
Bylaws ..	16	6	59	65	...	61	...	5	15
Partitions ..	16	...	193	193	...	175	2	11	23
Mosquito Orders ..	24	4	235	238	1	238	4	1	23
Rats ...	2	...	29	29	...	28	...	1	2
Disinfection of infected houses	...	...	441	440	1	434	...	6	...
Wells ...	8	...	29	29	...	25	...	...	12
Closing Order ..	10	...	1	1	...	10	...	...	1
Minor Offences Ordinance ..	...	...	1	1	...	1	...	...	...
Total ..	405	14	4,481	4,479	16	4,526	37	45	313

45 notices were cancelled for various reasons.

369 Nuisance notices were complied with during the year dealing with 632 houses of which 322 were structurally altered to provide light and ventilation and land was set apart for back lanes or passages.

340 houses were repaired, i.e., floors, drains, roof and latrines put in order.

1 marshy land was filled in and 154 other nuisances dealt with. In 37 cases work has been started.

13 permits were granted to erect latrines or to construct drains.

Wells.

29 notices under Section 247 were served and 16 brought forward from 1926. 25 were complied with; 35 wells were closed.

Cemeteries.

The Sub-Inspector in charge visited the cemeteries 163 times.

Exhumations.

86 applications for exhumation of bodies were received, but only 68 bodies were exhumed under special licence.

Passengers.

358 passengers arrived from infected ports and passed through this office as against 1978 last year.

Plans.

862 plans were sent in and examined in this office as against 471 last year.

Prosecutions.

481	summons were issued during the year	...	478	Convictions
		..	19	Withdrawn
89	were brought forward from 1926 (vide list A)	...	73	Carried forward
<hr/> Total 570			<hr/> Total 570	

56 Abatement of Nuisance, 1 Closing, 2 Prohibition, 2 Ejectment and 16 Mandatory Orders were obtained.

The fines imposed by the Magistrates amounted to \$4,809.10 against \$7,676.10 last year.

Disinfections.

455 houses were disinfected during the year for the following causes:—

Phthisis	...	...	...	...	262
Measles	...	...	...	...	3
Dysentery	...	...	...	...	31
Diarrhoea	...	...	...	...	112
Enteritis and Enteric	...	...	...	...	29
Chicket-pox	...	...	...	...	15
Diphtheria	...	...	...	...	2
Leprosy	...	...	...	...	1
					<hr/>
Total					455

The houses disinfected being distributed as follows:—

Phthisis:—Carnarvon Street (13), Dato Kramat Road (12), Chulia Street and Perak Road (9 each), Penang Road and Beach Street (8 each), East Jelutong (7), Bridge Street, Magazine Road, Toh Aka Lane, Rope Walk and Kuala Kangsar Road (6 each), Carnarvon Lane, Hutton Lane, West Jelutong, Prangin Road, Weld Quay and Kampong Java Lama (5 each), Irving Road, Macalister Road, Malay Street, Noordin Street, Campbell Street, Kimberley Street, Kampong Malabar, Penang Street, Caunter Hall and Cintra Street (4 each), Transfer Road, Aier Etam Road, Queen Street, Brick Kilm Road, Macalister Lane, Siam Road, Jelutong Road and Burmah Road (3 each), Dato Koyah Road, Lorong Slamet, Kedah Road, Love Lane, Acheen Street, Seck Chuan Lane, Buckingham Street, Perlis Road, Scotland Road, Malay Street Ghaut, Victoria Street, Aboo Sittee Lane, Perak Lane Batu Lanchang, McNair Street, Bishop Street, China Street, Patani Road, Armenian Street and Sungei Pinang Road (2 each), New Lane, North Beach, Kelawei Road, Noordin Street Ghaut, Bertam Lane, Presgrave Street Ghaut, Market Lane, Jones Road, Chowrasta Road, Tamil Street, Hong Kong Street, Nagore Road, Presgrave Street, Keng Kwee Street, Burmah Lane, Sandilands Street, Leith Street, Prangin Lane, Kampong Kolam, Tek Soon Street, Singora Lane, Malacca Street, Green Lane, Maxwell Road, Muntri Street, Chulia Lane, Argyll Road, Pahang Road, Stewart Lane, Cross Street, Batu Lanchang Road and Gaol Road (1 each.)

Measles:—Patani Road (3).

Dysentery:—Aier Etam Road (5), Magazine Road (3), Dato Kramat Road, Hutton Lane and Brick Kiln Road (2 each), Bishop Street, Tye Sin Street, Anson Road, Batu Lanchang Road, Maxwell Road, Victoria Street, Western Road, Patani Road, Barrack Road, Irving Road, York Road, Macalister Road, Toh Aka Lane, Aboo Sittee Lane, Siam Road, Burmah Road and West Jelutong (1 each).

Diarrhoea:—Bridge Street (9), West Jelutong (6), Magazine Road (5), Chulia Street and Jelutong Road (4 each), Dato Kramat Road, Noordin Street, Maxwell Road, Rope Walk, Macalister Road, Green Lane, Beach Street, East Jelutong and Stewart Lane (3 each), Presgrave Street Ghaut, Weld Quay, Kinta Lane, Perak Lane, Prangin Road, Gladstone Road, Campbell Street, Burmah Road, Brick Kiln Road, Macalister Lane and Armenian Street (2 each), Madras Lane, York Road, Sri Bahari Road, Edgcumbe Road, Tek Soon Street, Carnarvon Street, Batu Lanchang, Hong Kong Street, Bertam Lane, Kajang Road, Penang Street, Malay Street, Love Lane, Kedah Road, McNair Street, Kuala Kangsar Road, Transfer Road, Lorong Susu, Perak Road, Western Road, Aier Etam Road, Che Em Lane, Church Street, Cecil Street, Sandilands Street, Muntri Street, Aboo Sittee Lane, Sungei Pinang Road, Chulia Lane, Kampong Java Bharu, Penang Road, Kampong Malabar, Cantonment Road, Aier Rajah Road, Lumut Lane and Kuantan Road (1 each).

Enteritis and Enteric:—Jelutong Road, Beach Street, College Lane, Kampong Malabar, Macalister Road, Campbell Street and Green Hall (2 each), Queen Street, Malacca Court, Carnarvon Street, Hutton Lane, Patani Road, Malay Street, Perak Road, West Jelutong, Kimberley Street, Prangin Lane, Aboo Sittee Lane, Muntri Street, Penang Street, McNair Street and Bridge Street (1 each).

Chicken-pox:—Anson Road (3), Keng Kwee Street (2), River Road, Bishop Street, Larut Road, King Street, Beach Street, Transfer Road, Kinta Lane, Burma Road, Kampong Java Bharu and Seang Tek Road (1 each).

Diphtheria:—Argyll Road and Prangin Lane (1 each).

Leprosy:—Nanning Street (1).

Trades.

The fees collected during the year for trade licences amounted to \$8,404.70 against \$7,856.70, an increase of \$548 (vide attached List B.)

Common Lodging Houses.

839 Common Lodging Houses were licensed during the year against 918 in 1926, the fees collected amounted to \$1,596.80 as against \$1,306.00, a decrease of 79 houses and an increase of fees of \$290.80.

No night raids were made during the year.

Lodging Houses under the Minor Offences Ordinance.

30 Lodging Houses were licensed under the Minor Offences Ordinance against 16 in 1926.

Milk.

211 milk-sellers were registered in 1927 against 198 in 1926, an increase of 13.

15 samples were sent for analysis of which 9 were found to be adulterated with from 10 to 39% of added water and 3 skimmed milk.

53 summonses were issued (12 for selling milk adulterated with added water and skimmed milk and 41 for offences against the by-laws and regulations). Of the former one was fined \$500, one \$100, one \$75 and three \$50 (each), and the sellers of the skimmed milk one was fined \$75 and two \$20 (each).

48 cases were brought forward from 1926.

Total 101

44 convictions were obtained

57 carried forward to 1928.

Total 101

Fines amounting to \$1,184 were imposed against \$613 in 1926—an increase of \$571.

The Sanitary Inspectors spent an afternoon each month in testing milk by lactometer from the various milk-sellers whom they met in different parts of the town.

205 samples were tested during the year by them and 4,807 by the Laboratory Assistant.

Vaccination.

Our vaccinators made 2,682 primary vaccination of which 2,635 were successful, 34 modified and 13 not seen. 1,650 tubes of lymph were used at a cost of \$495.

Private practitioners and public vaccinators made 1,030 primary vaccinations.

Anti-Mosquito Works.

An extra gang of 20 men was engaged in October primarily for the district above Cantonment Road to the Municipal boundary, and from Bagan Jermal Village to Kampong Bahru, and it is hoped that they will be housed in York Road near the Chinese Cemetery.

The Anti-Mosquito gangs did good work, cutting down vegetation, digging, levelling and clearing ditches, collecting old tins, coconut shells and burying them at Dato Kramat, Waterfall, Ayer Rajah, Perak, Burmah, Gottlieb, Brown, Scott, Scotland, Macalister, Brick Kiln, Anson, Patani, Seang Tek, Siam, Trang, Barrack, Cantonment, Kelawei, Krian, Larut, Jahudi, Pahang, Sungei Pinang, York, Jelutong, Batu Lanchang, Bell, Hogan, Adam and Barnett Roads, East Jelutong, Ayer Etam behind Ayer Etam Road private market, Kinta, Singora, Green and Bagan Jermal Lanes, Lorong Slamet, Westlands and Babington Avenue;

they also cleared the river banks from the Chetty's Temple to Perak Road bridge, before and after the Thaipusam they cleared up the ground in the vicinity of the Temple.

The number of chokras was increased to 30 and the gang divided into two. They went through the Town area destroying and clearing up the breeding places of mosquitoes generally.

An extra gang of 6 oilers was taken on in December to enable us to extend our operation.

All ditches, pools and swamps within the Town area and the Race Course, and since December, Bagan Jermal, Mount Erskine, Western Road, Scotland Road to Kampong Bharu, Green Lane, Counter Hall, Perak Road, East and West Jelutong and Jelutong Village were regularly sprayed with solar oil and crude oil once a week; 8,125 gallons of crude oil, 5,980 gallons of solar oil 4,608 gallons of anti-mosquito mixture and 56 gallons of kerosine oil were used; the cost was \$5,349.80.

The gangs also cleared up private lands at the cost of the owners.

Staff.

The staff worked satisfactorily throughout the year.

I have the honour to be,

Sir,

Your obedient servant,

W. A. WARD,

Chief Sanitary Inspector.

A

Prosecutions.	Brought forward from 1926.	Issued in 1927	Cases in Court	Convictions	Withdrawn	Dismissed,	A. N. O.	C. O.	E. O.	P. O.	M. O.	Total orders obtained.	Fines.		Costs.	
													\$	cts.	\$	cts.
Nuisance Notice ..	11	71	80	77	3	...	56	...	...	...	5	61	215	00	38	50
Nuisance Order ..	15	20	26	24	2	...	...	1	1	...	...	2	602	10	12	00
Drains and Latrines ..	2	9	10	10	...	...	...	...	...	...	8	8	15	00	5	00
Trades ...	...	55	54	54	...	...	...	...	...	...	...	...	375	00	27	00
Common Lodging Houses	2	93	95	90	5	...	...	...	...	...	...	...	615	00	45	00
Breach of C.L.H. by-laws	4	5	9	9	...	...	...	...	...	...	...	...	311	00	4	50
Filthy premises ...	...	24	22	22	...	...	...	...	...	...	...	...	254	00	11	00
Sections 160/161 ...	2	9	11	11	...	...	...	...	...	...	2	2	30	00	5	50
Bakery by-laws ...	...	48	47	46	1	...	...	...	...	2	...	2	403	00	23	00
Milk ...	48	53	44	44	...	...	...	...	...	...	...	...	1,184	00	67	00
Failing to report birth ...	...	12	12	12	...	...	...	...	...	...	...	...	...	...	6	00
Failing to report death ...	...	2	2	2	...	...	...	...	...	...	...	...	...	...	1	00
Breach of pig by-laws ...	2	47	49	48	1	...	...	...	...	...	...	...	373	00	24	00
Failing to comply with Mandatory Order ...	...	2	2	2	...	...	...	...	...	...	...	...	...	...	1	00
Lime Washing ...	...	10	10	7	3	...	...	...	...	...	...	...	60	00	3	50
Failing to expose license board ...	...	4	4	4	...	...	...	...	...	...	...	...	17	00	2	00
Mosquitoes ...	3	8	11	11	...	...	...	...	...	...	...	...	330	00	5	50
Using night soil as manure ...	...	1	1	1	...	...	...	...	...	...	...	...	15	00	...	50
Wells ...	...	2	2	2	...	...	...	...	...	...	1	1	...	...	1	00
Failing to comply with Closing Order Notice ...	...	6	6	2	4	...	...	...	1	...	...	1	10	00	1	00
Total ..	89	481	497	478	19	...	56	1	2	2	16	77	4,809	10	284	00

Trade Licenses 1927.	No. 1926.	Fees		No. 1927	Fees		No. In- crease.	Fees		No. De- crease.	Fees	
		\$	cts.		\$	cts.		\$	cts.		\$	cts.
Coal Depot ...	4	48	00	4	48	00	—	—	—	—	—	—
Charcoal Depot ...	28	168	00	29	174	00	1	6	00	—	—	—
Candle Factory ...	14	112	00	16	128	00	2	16	00	—	—	—
Cattleshed & Cattle ...	130	610	00	151	648	00	21	38	00	—	—	—
Wood Depot ...	80	480	00	90	540	00	10	60	00	—	—	—
Dyeing House ...	5	50	00	5	50	00	—	—	—	—	—	—
Fish Storing & Curing ...	44	528	00	45	540	00	1	12	00	—	—	—
Braziers, Foundries and Smithies ...	56	112	00	58	116	00	2	4	00	—	—	—
Pig Sties ...	63	126	00	73	146	00	10	20	00	—	—	—
Pig Sties (Free) ...	584	—	—	668	—	—	84	—	—	—	—	—
Pepper Washing Factory	1	10	00	1	10	00	—	—	—	—	—	—
Pottery Making ...	1	2	00	2	4	00	1	2	00	—	—	—
Rags, Bones & Feathers	4	48	00	3	36	00	—	—	—	1	12	00
Soap Factory ...	12	96	00	11	88	00	—	—	—	1	8	00
Stables & Horses ...	2	11	00	2	11	00	—	—	—	—	—	—
Sheep & Goats ..	5	20	70	5	20	70	—	—	—	—	—	—
Tanneries ...	17	408	00	17	408	00	—	—	—	—	—	—
Blachan Factory ...	2	24	00	2	24	00	—	—	—	—	—	—
Bakeshops ...	35	175	00	30	150	00	—	—	—	5	25	00
Cookshops ...	180	900	00	176	880	00	—	—	—	4	20	00
Eatingshops ...	630	3,150	00	718	3,590	00	88	440	00	—	—	—
Storing & Curing Hides	8	96	00	8	96	00	—	—	—	—	—	—
Sago Factory ...	1	10	00	1	10	00	—	—	—	—	—	—
Atap, Kajang & Straw ...	52	156	00	56	168	00	4	12	00	—	—	—
Sugar Boiling ...	12	72	00	13	78	00	1	6	00	—	—	—
Market Gardens ...	30	—	—	38	—	00	8	—	—	—	—	—
Drying Cloth ...	3	15	00	3	15	00	—	—	—	—	—	—
Milksellers ...	198	198	00	211	211	00	3	3	00	—	—	—
Lodging Houses (Minor Offences Ord'ce) ...	16	16	00	30	30	00	14	14	00	—	—	—
Fresh Fish & Meat ...	43	215	00	35	175	00	—	—	—	8	40	00
Total ...	2,260	7,856	70	2,501	8,404	70	250	633	00	19	05	00
Common Lodging Houses	918	1,306	00	839	1,596	80	—	290	80	79	—	—

